SHORIN, K.N.

Method of controlled motion of a particle beam in an accelerator.
Prib. i tekh. eksp. 9 no.4:25-27 Jl-Ag '64. (MIRA 17:12)

1. Fizicheskiy institut AN SSSR.

L 45443-65 EWT(m)/EPA(w)-2/EWA(m)-2 Pt-7/Pab-10 IJP(c)

ACCESSION NR: AP5007059 S/0120/65/000/001/0201/0202

AUTHOR: Artem'yeva, Z. L.; Shorin, K. N.

TITLE: Adjustment of direction of the gamma beam in cyclic electron accelerators

SOURCE: Pribory i tekhnika eksperimenta, no. 1, 1965, 201-202

TOPIC TAGS: electron accelerator, cyclotron

ABSTRACT: The possibility is considered of adjusting the direction of the gamma beam by varying the final orbits of acceleration. For small angular deviations, the target may remain fixed which materially simplifies its design; also, the possibility arises for adjusting the beam in the vertical plane. For large angular deviations, a number of fixed targets may be used. The above method was experimentally verified on the FIAN 700-Mev synchrotron where the first-harmonic orbit was deviated (by 13') by application of current pulses (4—10 amp) to the acceleration windings. Orig. art. has: no figure, formula, or table.

ASSOCIATION: Fizicheskiy institut AN SSSR (Institute of Physics, AN SSSR)

SUBMITTED: 19Dec63 ENCL: 00 SUB CODE: NP

NO REF SOV: 001 OTHER: 000

Card 1/1

L 38206-66 EWT(m) IJP(c)

ACC NR: AP6022029 SOURCE CODE: UR/0120/66/000/003/0190/0192

AUTHOR: Artem'yeva, Z. L.; Shorin, K. N.

ORG: Institute of Physics, AN SSSR, Moscow (Fizicheskiy institut AN SSSR)

TITLE: Method for enhancing the efficiency of magnetic shielding

SOURCE: Pribory i tekhnika eksperimenta, no. 3, 1966, 190-192

TOPIC TAGS: magnetic shielding, hysteresisless magnetization, electron accelerator

ABSTRACT: The results are reported of an investigation of shielding the accelerator tube from the Earth magnetic field by hysteresisless soft-steel torus rings. In a model study, 10 rings of 260 mm diameter had a shielding factor of 1.65—2.0 when the constant field was held within 0.4—3.5 oe; when a strong damping-amplitude a-c field was added (the hysteresisless magnetization), the shielding factor increased to 20—14. In the experiment, a 2.2-m long accelerating tube with an initial electron energy of 5—8 kev and final energy of 800 kev was shielded by the steel rings which reduced the transverse Earth-magnetism component of 0.45 oe down to 0.02 oe (except for the edges where the field was 0.1 oe). Orig. art. has: 3 figures. [03]

SUB CODE: 09 / SUBM DATE: 10Mar65 / ORIG REF: 003 ATD PRESS: 5044

Card 1/1 UDC: 621.316.97

25605 [illegible], P.

Termitnomufel'naya svarka stal'nykh provodov Voen. svyazist, 1948, No. 7, s. 43-45.

SO: Letopis' Zhurnal Statey, No. 30, Moscow, 1948

BREYTBART, A.Ya., redaktor; SHORIN, N.A., redaktor; URAZOVA, A.N., tekhnicheskiy redaktor.

[Electronic time measurements. Translation for the English] Lampovye skhemy dlia izmereniia vremeni. Perevod s angliiskogo. Pod red. A.IA.Breitbarta. Moskva, Izd-vo "Sovetskoe radio." Vol. 1. 1951. 287 p. (MLRA 8:2)

1. Massachusetts Institute of Technology. Radiation Laboratory. (Time measurements) (Electronic apparatus and appliances)

BUNIMOVICH, V.I.; SHORIN, N.A., redaktor; URAZOVA, A.N., tekhnicheskiy redaktor.

[Fluctuation processes in radio receivers] Fliuktuatsionnye protsessy v radiopriemnykh ustroistvakh. Moskva, Izd-vo "Sovetskoe radio," 1951. 360 p. [Microfilm] (MLRA 7:12)
(Radio--Receivers and reception) (Electron tube circuits)

VAYNSHTEYN, L.A.; SHORIN, N.A., redaktor; URAZOVA, A.N., tekhnicheskiy redaktor

[Diffraction of electromagnetic and sound waves at the open end of a wave guide] Diffraktsiia elektromagnitnykh i zvukovykh voln na otkrytom kontse volnovoda. Moskva, Izd-vo "Sovetskoe radio," 1953. 203 p. [Microfilm] (MLRA 7:10)
(Electric waves) (Sound waves)

SIVERS, A.P.; SHORIN, N.A., redaktor; URAZOVA, A.N., tekhnicheskiy redaktor.

[Radar; calculation and planning] Radiolokatsionnye priemniki; raschet i proektirovanie. 2 izd. Moskva, Izd-vo "Sovetskoe radio," 1953. 359 p. (MLRA 7:8)
(Radar)

NAUMENKO, Ye.D., redaktor; SHORIN, N.A., redaktor; KORUZEV, N.N., tekhnicheskiy redaktor.

[Reflex klystrons. Translated from the English] Otrazhatel'nye klistrony. Perevod s angliiskogo. Moskva, Izd-vo "Sovetskoe radio," 1954. 251 p. (MLRA 8:2)
(Amplifiers, Electron-tube)

DAVYDOV, Grigoriy Borisovich; TAFT, V.A., otv.red.; SHORIN, N.A., red.; KARABILOVA, S.F., tekhn.red.

[Fundamentals of the theory and analysis of phase-correcting circuits] Osnovy teorii i rascheta fazokorrektiruiushchikh tsepei. Moskva, Gos. izd-vo lit-ry po voprosam sviazi i radio, 1958. 292 p. (MIRA 11:12)

(Electric networks)

SHORIN, N.A.

YEMEL'YANOV, V.S., otv.red.; BARDIN, I.P., red.; VINOGRADOV, A.P., red.; GOL'DANSKIY, V.I., red.; GULYAKIN, I.V., red.; DOLIN, P.I., red.; YEFREMOV, D.V., red.; KRASIN, A.K., red.; LEBEDINSKIY, A.V., red.; MINTS, A.L., red.; MURIN, A.N., red.; NIZE, V.E., red.; NOVIKOV, I.I., red.; SEMENOV, V.F., red.; SOBOLEV, I.N., red.; BAKHAROVSKIY, G.Ya.; nauchnyy red.; BERKOVICH, D.M., nauchnyy red.; DANOVSKIY, N.F., nauchnyy red.; DELONE, N.N., nauchnyy red.; KON, M.A., nauchnyy red.; KOPYLOV, V.N., nauchnyy red.; MANDEL'TSVAYG, Yu.B.; MILOVIDOV, B.M., nauchnyy red.; MOSTOVENKO, N.P., nauchnyy red.; MURINOV, P.A., nauchnyy red.; POLYAKOV, I.A., nauchnyy red.; PREOBRAZHENSKAYA, Z.P., nauchnyy red.; RABINOVICH, A.M., nauchnyy red.; SIMKIN, S.M., nauchnyy red.; SKVORTSOV, I.M., nauchnyy red.; SYSOYEV, P.V., nauchnyy red.; SHORIN, N.A., nauchnyy red.; SHREYBERG, G.L., nauchnyy red.; SHTEYNMAN, R.Ya., nauchnyy red.; KOSTI, S.D., tekhn.red.

[Concise atomic energy encyclopedia] Kratkaia entsiklopediia "Atomnaia energiia." [Tables of isotopes (according to published data available at the beginning of 1958)] Tablitsa izotopov (po dannym, opublikovannym k nachalu 1958. 12 p. Gos. nauch. izd-vo "Bol'shaia sovetskaia entsiklopediia," 1958. 610 p. (MIRA 12:1)

1. Sotrudniki Bol'shoy Sovetskoy Entsiklopedii (for Bakharovskiy, Berkovich, Danovskiy, Delone, Kon, Kopylov, Mandel'tsvayg, Milovidov, Mostovenko, Murinov, Polyakov, Preobrazhenskaya, Rabinovich, Simkin, Skvortsov, Sysoyev, Shorin, Shreyberg, Shteynman).
(Atomic energy)

MAKAREVICH, S.M.; SHORIN, N.A.

Electronic digital computers. Priborostroenie no.10:24-26 O '60.
(MIRA 13:11)

(Electronic digital computers)

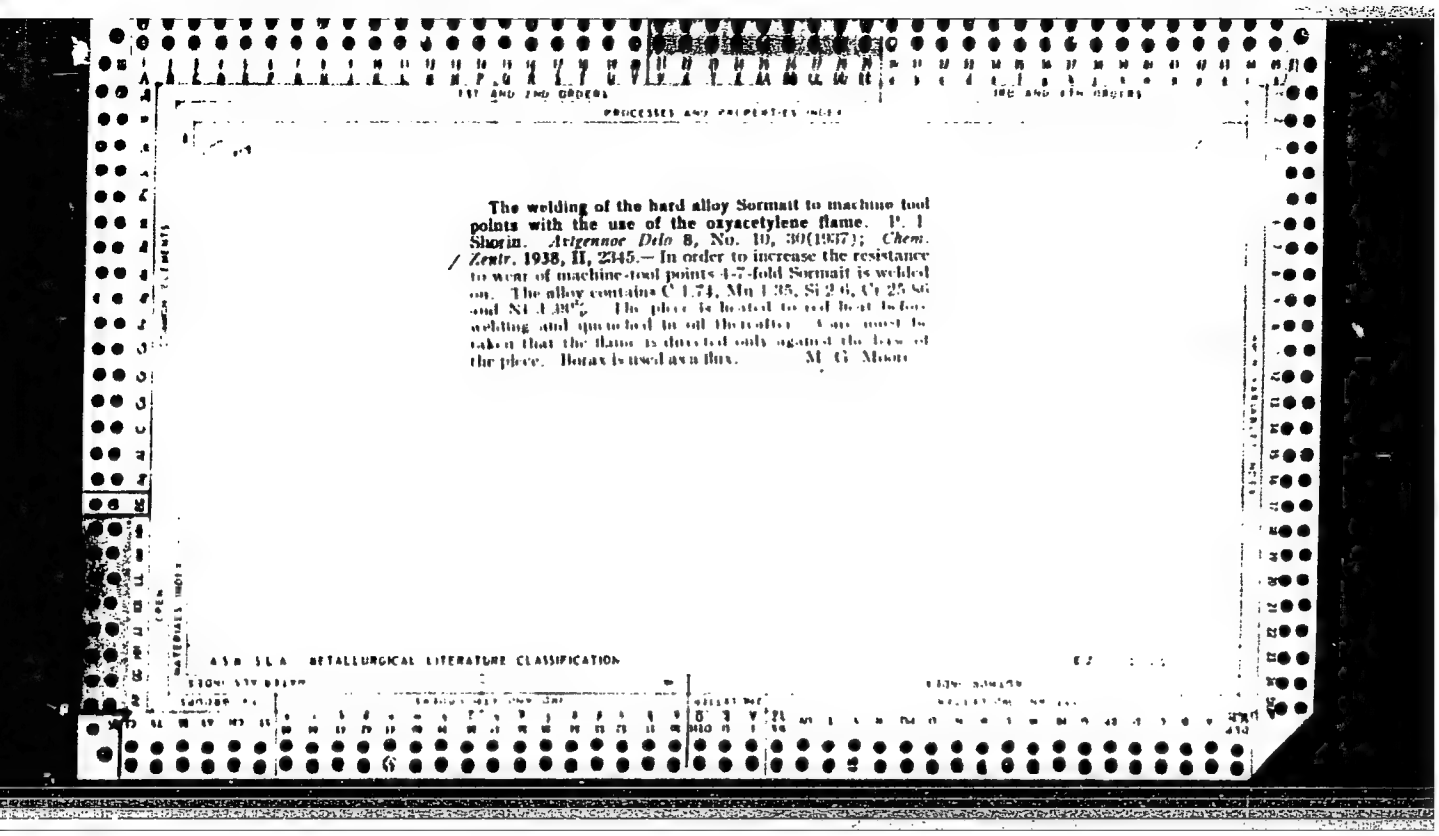
SHORIN, P., Engr-Lt Col

Author of article, "The History of the Development of Small Arms Ammunition in Russia." (VV, No 1, 1955)

SO: Krasnaya Zvezda, Sum #450, 11 Apr 55

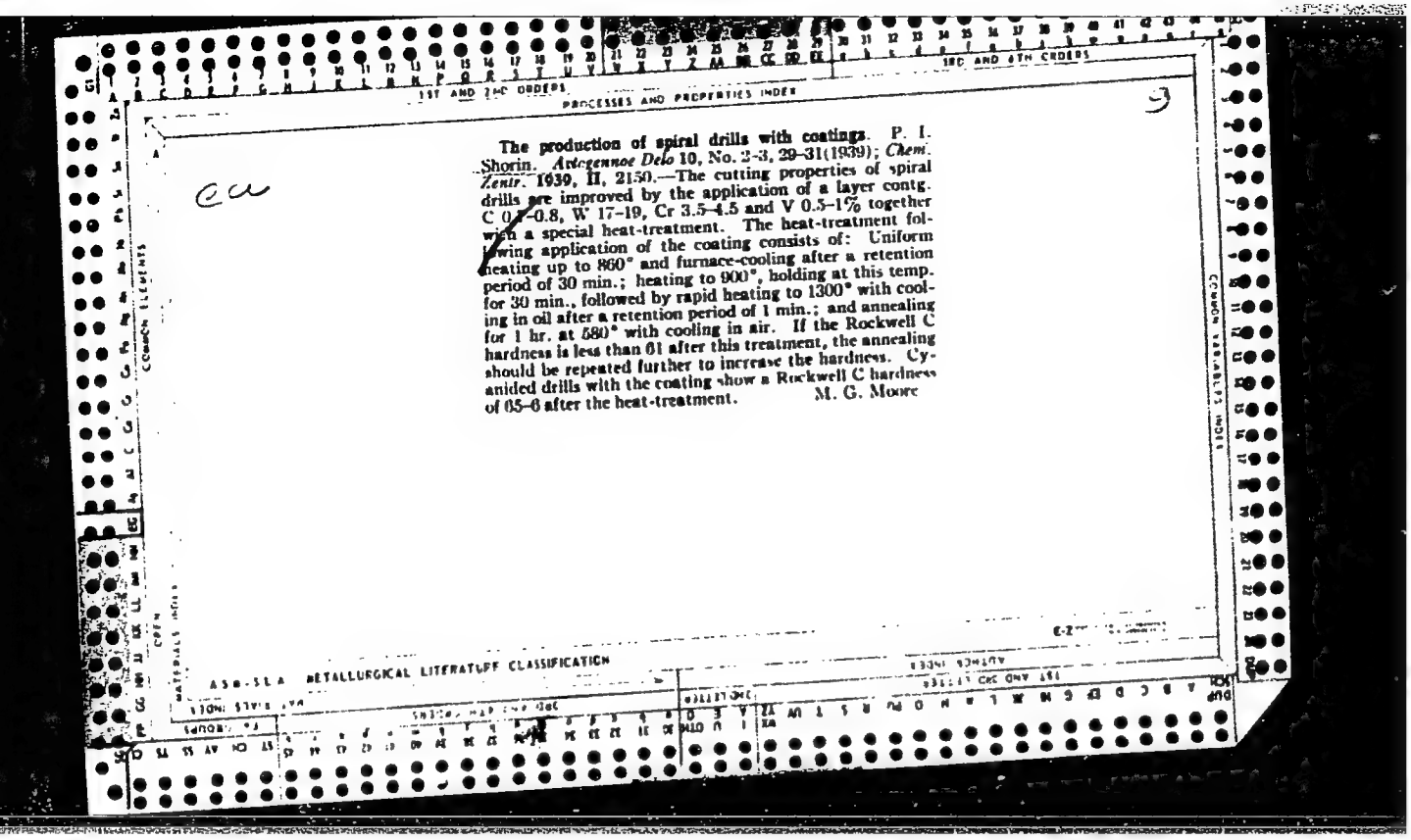
GNATOVSKIY, Nikolay Ivanovich, dotsent, kand.tekhn.nauk, inzh.-polkovnik; SHORIN, Pavel Aleksandrovich, inzh.-podpolkovnik; VIL'CHINSKIY, I.K., red.polkovnik; STREL'NIKOVA, M.A., tekhn.red.

[Evolution of small arms in Russia] Istoriia rzvitiia otechestvennogo strelkovogo oruzhiia. Moskva, Voen.izd-vo M-va obor.SSSR, 1959. 247 p. (MIRA 12:9)
(Firearms)



The welding of the hard alloy Sormait to machine tool points with the use of the oxyacetylene flame. P. I. Shorin. *Avtogennoe Delo* **8**, No. 10, 30(1937); *Chem. Zentr.* **1938, II**, 2345.— In order to increase the resistance to wear of machine-tool points 4-7-fold Sormait is welded on. The alloy contains C 1.74, Mn 1.35, Si 2.6, Cr 25.86 and Ni 4.39%. The piece is heated to red heat before welding and quenched in oil thereafter. Care must be taken that the flame is directed only against the face of the piece. Borax is used as a flux. M. G. Moore

A S M S L A METALLURGICAL LITERATURE CLASSIFICATION



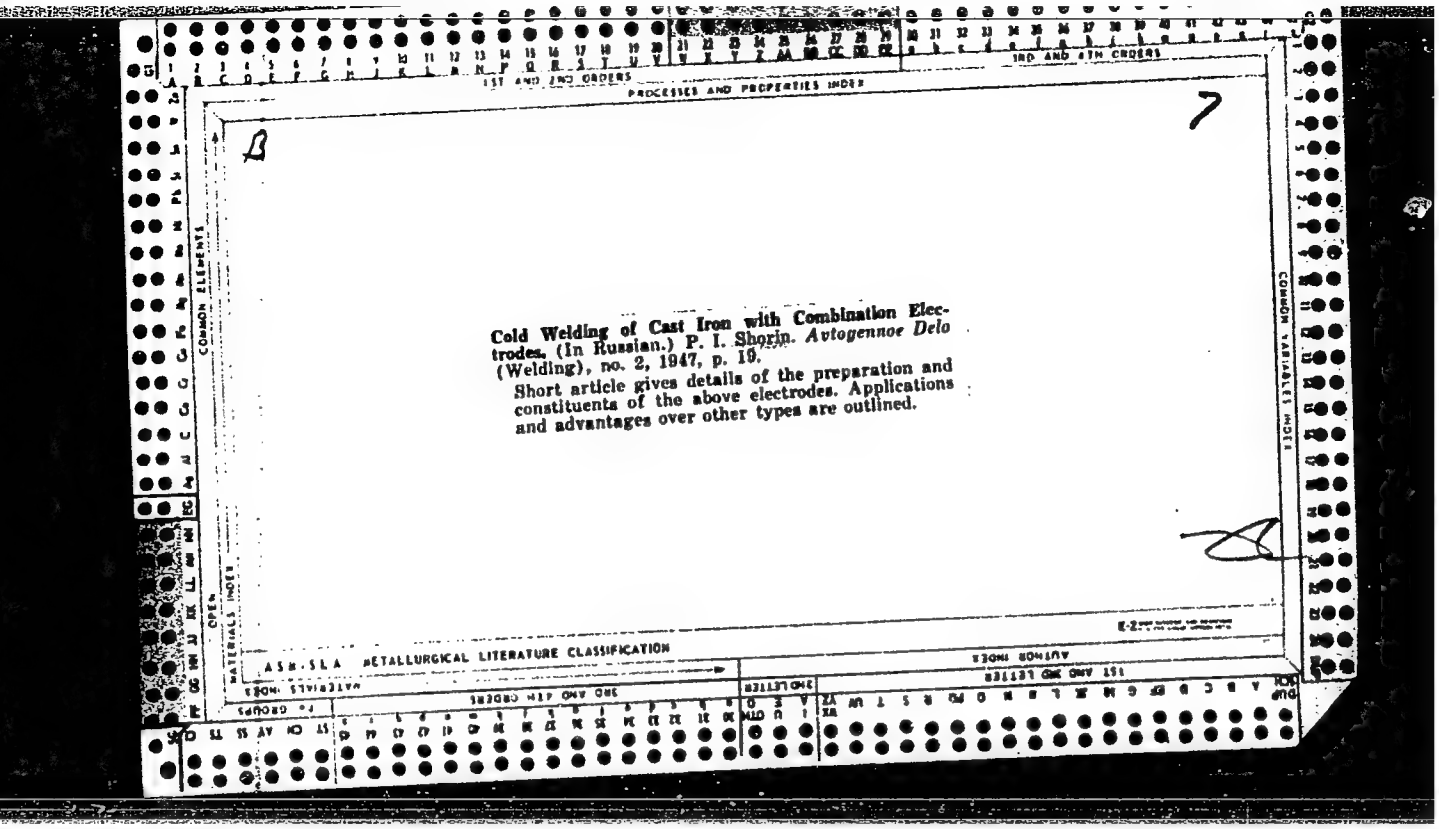
1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

3RD AND 4TH ORDERS

The production of spiral drills with coatings. P. I. Shorin. *Avtogennoe Delo* 10, No. 2-3, 29-31(1939); *Chem. Zentr.* 1939, II, 2150.—The cutting properties of spiral drills are improved by the application of a layer contg. C 0.7–0.8, W 17–19, Cr 3.5–4.5 and V 0.5–1% together with a special heat-treatment. The heat-treatment following application of the coating consists of: Uniform heating up to 860° and furnace-cooling after a retention period of 30 min.; heating to 900°, holding at this temp. for 30 min., followed by rapid heating to 1300° with cooling in oil after a retention period of 1 min.; and annealing for 1 hr. at 580° with cooling in air. If the Rockwell C hardness is less than 61 after this treatment, the annealing should be repeated further to increase the hardness. Cyanided drills with the coating show a Rockwell C hardness of 65–6 after the heat-treatment. M. G. Moore

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



Cold Welding of Cast Iron with Combination Electrodes. (In Russian.) P. I. Shorin. *Avtogennoe Delo* (Welding), no. 2, 1947, p. 19.

Short article gives details of the preparation and constituents of the above electrodes. Applications and advantages over other types are outlined.

SHORIN, P. I.

FA 12T73

USSR/Welding - Cast Iron
Welding - Electrodes

Jun 1947

"Cold Welding of Cast Iron by Combined Electrodes," P. I. Shorin, 3 pp

"Vestnik Mashinostroyeniya" Vol XXVII, No 5

Illustrated with photographs and cross sections. Describes process with Mark 1, 2 and 3 electrodes.

12T73

SHORIN, P. I.

MANUFACTURE OF FLAME-CUTTING TORCHES AT THE KOLOMENSK LOCOMOTIVE WORKS. P. I. Shorin. (Avtogennoe Delo, 1948, No. 10, p. 29). (In Russian). A brief description is given of oxyacetylene cutting torches, developed during the war at the Kolomensk Works, for cutting metal 50 to 400 mm. thick. The approximate consumption of oxygen and acetylene are 8-52 and 0.6-1 cu. m./hr. respectively.

Immediate source clipping

SHORIN, P. I., Engr

PA 167T51

USSR/Engineering - Boilers, Welding Jul 50

"Devices for Automatic Welding of a Locomotive Boiler," P. I. Shorin, Engr

"Avtogen Delo" No 7, pp 25-27

Describes several types of tilters used in boiler making in combination with welding machines. Tilter permits 360° turns of bulky heavy pieces and eliminates use of bridge cranes. Describes flux-holding devices to keep gap between edges of parts to be welded filled with flux, thus preventing leakage of molten metal during automatic welding procedure.

[redacted]

167T51

SHORIN,P.I., inzhener

Welding a steam engine cast iron cylinder of a rolling mill.
Svar. proizv. no.2:27-28 F '55. (MLRA 8:9)
(Steam engines--Cylinders) (Cast iron--Welding)

18(7)
AUTHOR: Shorin, P.I. SOV/117-59-2-20/27

TITLE: Repair of Castings by Welding-Up (Ispravleniye otlivok zavarkoy)

PERIODICAL: Mashinostroitel', 1959, Nr 2, pp 34-36 (USSR)

ABSTRACT: The author describes the repair work done on defective cast iron castings conducted by the Kolomenskiy zavod (Kolomna Plant) imeni Kuybyshev, with the application of cold and hot arc welding using copper-steel electrodes, copper-nickel electrodes, iron-nickel electrodes TsCh-3, cast-iron electrodes GOST 2671-44, and hot welding-up with the use of gas and added cast iron. The article contains a table showing what welding method is applied to which defect. Repair work on defective castings saves the plant over 3,000,000 rubles a year. There are 4 diagrams, 2 photos and 1 table.

Card 1/1

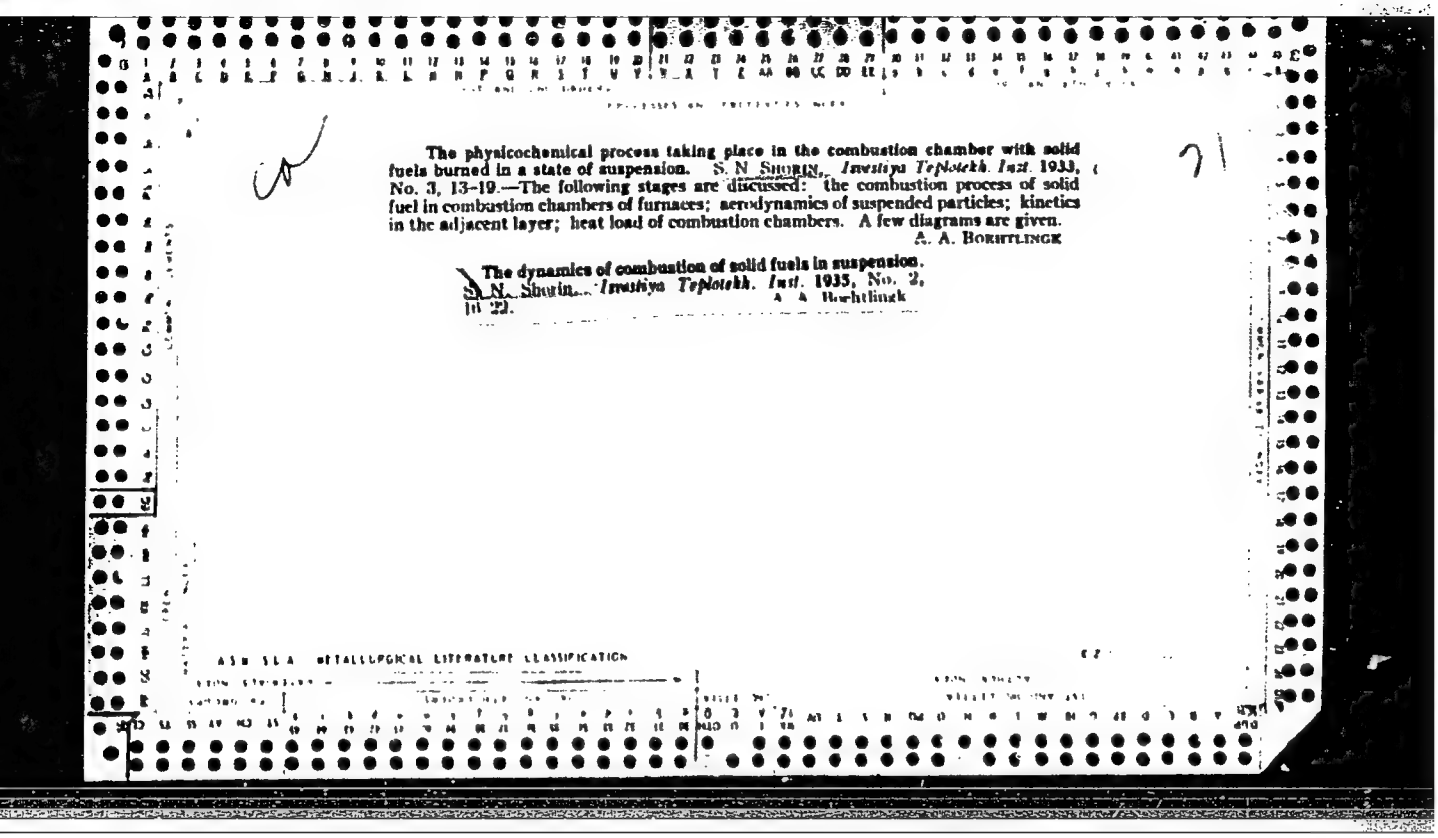
SHORIN, P.I.

Restoring stressed cast iron diesel engine parts. Lit.proizv.
no.10:38-39 O '64. (MIRA 18:4)

SHORIN, Pavel Matveyevich, inzh.; YEREMIN, N.I., red.

[The second life of machines] Vtoraia zhizn' mashin. Ul'ianovsk, Ul'ianovskoe knizhnoe izd-vo, 1961. 22 p. (MIRA 18:4)

1. Zamestitel' nachal'nika otdela glavnogo mekhanika i energetika Ul'yanovskogo sovnarkhoza, Ul'yanovskaya oblast' (for Shorin).



The physicochemical process taking place in the combustion chamber with solid fuels burned in a state of suspension. S. N. Shorin. *Izvestiya Teplotekh. Inst.* 1933, No. 3, 13–19.—The following stages are discussed: the combustion process of solid fuel in combustion chambers of furnaces; aerodynamics of suspended particles; kinetics in the adjacent layer; heat load of combustion chambers. A few diagrams are given.

A. A. Borshtlingk

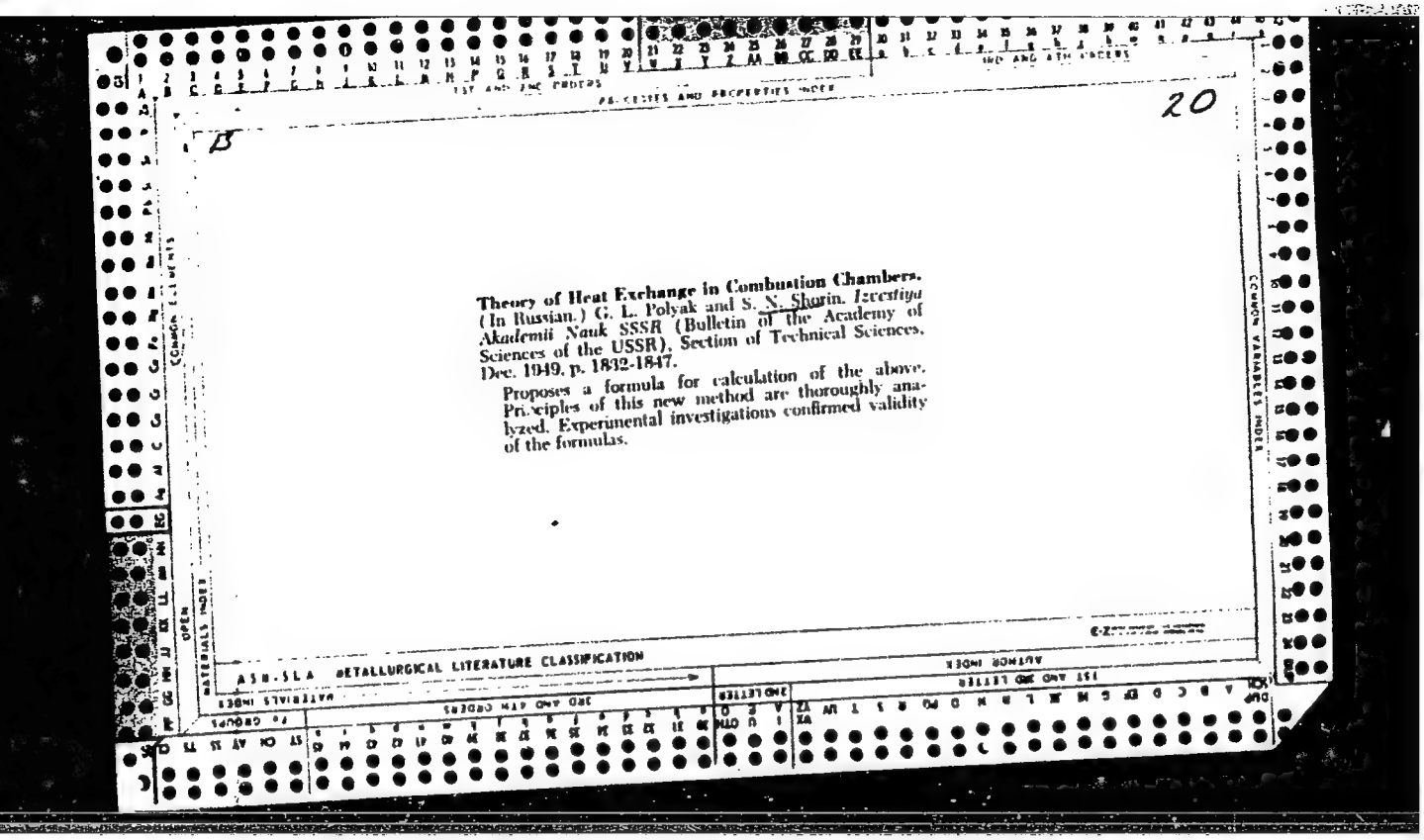
The dynamics of combustion of solid fuels in suspension. S. N. Shorin. *Izvestiya Teplotekh. Inst.* 1935, No. 2, 10–22.

A. A. Borshtlingk

SHORIN, S. N.

CA: 37-5570/7

SHORIN, S. N.
Izvest. Teplotekh. Inst. 1940, No. 9, 27-30; Khim.
Refera t. Zhur. 4, No. 5, 23, (1941)
The heat capacity of flue gases from spectroscopic
calculations.



Theory of Heat Exchange in Combustion Chambers. (In Russian.) G. L. Polyak and S. N. Shorin. *Izvestiya Akademii Nauk SSSR* (Bulletin of the Academy of Sciences of the USSR), Section of Technical Sciences, Dec. 1949, p. 1832-1847.

Proposes a formula for calculation of the above. Principles of this new method are thoroughly analyzed. Experimental investigations confirmed validity of the formulas.

USSR/Fuel - Combustion Jul 50
Thermodynamics

"Role of Radiant Energy in Combustion Processes," S. N. Shorin, Power Eng Inst imeni Krzhizhanovskiy, Acad Sci USSR

"Iz Ak Nauk, Otdel Tekh Nauk" No 7, pp 995-1015

Comparison of distribution of radiant and kinetic energies between vectors and element of volume shows that high-energy photons possess considerably greater statistical weight than gas molecules of same energies. Probability of photon activation of burning mixture proves considerably

162T41

USSR/Fuel - Combustion (Contd) Jul 50

higher, for suitable conditions, than probability of activation for colliding molecules. Gives equation of speed of flame propagation for the case of photon activation of molecules. Explains flameless combustion of gas. Shorin was advised by Acad M. V. Kirpichev and Prof G. L. Polyak. Submitted 21 Apr 50 by Acad M. V. Kirpichev.

162T41

SH ORIN, S.N.

SHORIN, S. N.

1 of 6

Heat Exchange by Radiation in the Presence of an Absorbing Medium

By S. N. SHORIN. (From *Izvestiya Akademi Nauk*, No. 3, 1951, pp. 389-406, 9 illustrations.)

The author introduces the equations of radiation in space in a very general form, largely borrowed from astro-physics. In simplified form, these equations can be applied to the radiation process in industrial furnaces, where other processes of heat exchange must be considered in addition. The theory is applied to the analysis of heat exchange in a simplified furnace model consisting of a plane-parallel layer of moving, absorbing medium between a radiating surface and a cooling surface. Finally, analytical results are compared with empirical methods to evaluate heat transmission in industrial furnaces.

HEAT exchange by radiation in the combustion chambers of boilers and furnaces usually takes place in the presence of a burning, radiating, and moving medium. In general, this medium consists of the gaseous substances CO_2, H_2O, SO_2, O_2, as well as H, CH, C_nH_m always diluted with 3 parts of nitrogen (by volume). Furthermore, according to the nature of the fuel and the method of its combustion, the flue gas may include admixtures of solid fuel particles such as tar and ash. Each individual component of the flue gas in a boiler or furnace possesses its characteristic properties of radiation absorption.

The most complex absorption distinguishes the gaseous components of the flue gas, such as CO_2 and H_2O. Although the absorption spectrum of these gases has been studied a long time ago, data on the frequency distribution of absorption coefficients are incomplete and the determination of the integral absorption is greatly complicated by a strong selective effect. The flame of tar-containing fuels (incandescent flame) and the combustion products of coal full of soot and carbon particles have a weak selective effect.

In this paper, we do not deal with the determination of absorption coefficients of the different components of the heating medium, nor with its total absorption, but are concerned first with the foundations of the theory of heat exchange by radiation in an absorbing medium, and subsequently discuss some of its applications.

over

The boundary condition at $x = l$ can be expressed in the following form (see eq. (5))

$$-\frac{1}{4k}\left|\frac{d(cU)}{dx}\right|_{x=l} = \frac{\frac{(cU)_{x=l}}{4} - \theta_s}{1/a_s - \frac{1}{2}} \qquad (10)$$

where

$$(cU)_{x=l} = 4\theta_{x=l} + \frac{\Pi''}{k}\left|\frac{d\theta^2}{dx}\right|_{x=l};$$

$$\Pi'' = \frac{w_0 c_p T}{4\theta}; \text{ and}$$

$$\left|\frac{d(cU)}{dx}\right|_{x=l} = 4\left|\frac{d\theta}{dx}\right|_{x=l} + \frac{\Pi''}{k}\left|\frac{d^2\theta}{dx^2}\right|_{x=l}.$$

Carrying out the differentiation and substitution, we obtain

$$\theta' - \theta'' = (\theta'' - \theta_s)\frac{1 - e^{-k\Pi'' l}}{\Pi''\left[\left(\frac{1}{a_s} - \frac{1}{2}\right)\left(1 + \frac{\Pi''}{4}\right) + \frac{\Pi''}{4}\right]} \qquad (11)$$

The heat transmission by radiation at the boundary is expressed by

$$q_{rad} = \frac{\frac{(cU)_{x=l}}{4} - \theta_s}{\frac{1}{a_s} - \frac{1}{2}} \left(\frac{1}{\quad}\right)$$

or $q_{rad} = \epsilon(\theta'' - \theta_s)$ .. .. (12')

where $\epsilon = 1\Big/\left[\left(\frac{1}{a_s} - \frac{1}{2}\right) + \frac{1}{\Pi'' + 4/\Pi''}\right]$ (13)

at $\Pi'' \approx 0$, $\epsilon \approx 1\Big/\left(\frac{1}{a_s} - \frac{1}{2}\right)$ or at $a_s = 1$, $\epsilon = 2$

at $\Pi'' \approx \infty$; $\epsilon \approx 1\Big/\left(\frac{1}{a_s} - \frac{1}{2}\right)$ or at $a_s = 1$, $\epsilon = 2$

Between $\Pi'' = 0$ and $\Pi'' = \infty$ the nominal emissivity $\epsilon < 1\Big/\left(\frac{1}{a_s} - \frac{1}{2}\right)$ depends on parameter Π''. The minimum value of ϵ is obtained at $\Pi'' = 2$ and becomes $\epsilon_{min} = 1\Big/\left(\frac{1}{a_s} - \frac{1}{4}\right)$

or at $a_s = 1$, $\epsilon_{min} = 1{\cdot}333$

and at $a_s = 0{\cdot}85$, $\epsilon_{min} = 1{\cdot}08$

Table 1 gives the values of the nominal coefficient of emissivity ϵ for different values of parameter Π''.

By means of the substitution of the value of ϑ'' into the equation of heat transmission

$$q = \epsilon (\vartheta'' - \vartheta_2)$$

we find that

$$q = \frac{\epsilon}{1 + B - AB} (\vartheta_1 - \vartheta_2) \quad .. \quad (18)$$

For a stationary medium in the plane-parallel layer, the parameter $H = 0$ and

$$\epsilon = 1 \Big/ \left(\frac{1}{a_1} + \frac{1}{a_2} - 1\right)$$

Resolving the indeterminateness (0/0) of expressions A and B thus obtained, we find that

$$A = \left(\frac{1}{a_1} - \frac{1}{2}\right) \Big/ kl \quad \text{and} \quad B = kl \Big/ \left(\frac{1}{a_2} - \frac{1}{2}\right)$$

As a result of the substitution into the eq. (18) of the values for ϵ, A and B at $H = 0$ we obtain

$$q = \frac{\vartheta_1 - \vartheta_2}{\left(\frac{1}{a_1} - \frac{1}{2}\right) + \left(\frac{1}{a_2} - \frac{1}{2}\right) + kl} \quad .. \quad (19)$$

The same expression for heat transferred by radiation with a stationary absorbing medium was obtained in 1940 by G. L. Poliakoff.

In the case of a non-absorbing medium in the plane-parallel layer kl vanishes and, therefore,

$$q = \frac{\vartheta_1 - \vartheta_2}{\frac{1}{a_1} + \frac{1}{a_2} - 1} \quad .. \quad .. \quad (20)$$

In other words, we obtain the well-known equation of heat exchange by radiation between two bodies with plane-parrallel surfaces.

Figs. 2 and 3 show families of curves representing the temperature T as a function of kx in a plane-parallel layer in the two cases of a stationary and a moving medium at $kl = 0$.

It is seen that in the cases of a stationary and a moving medium in the plane-parallel layer, a temperature step exists at the radiating surface, the magnitude of which depends on the amount of heat transmitted and the speed at which the medium moves (parameter H). With an increase in the speed of the medium, the

5 of 6

Equating the right-hand sides of eqs. (16) and (21), we obtain an equation for the determination of the temperature of the products of combustion at the radiating surface.

$$\frac{B}{F_r} v_r (c_r t_r - c_r t') \quad (\vartheta' - \vartheta'') \frac{\Pi' \left(1 + \frac{\Pi'^2}{4}\right)}{e^{k\Pi' l} - 1} \qquad (22)$$

In the same way, we obtain an equation for the determination of the temperature of the products of combustion at the radiation-absorbing surface:

$$\frac{B}{F_r} v_r (c_r t_r - c_r t'') = \varepsilon (\vartheta'' - \vartheta_2) \quad .. \quad (23)$$

Introducing the mean specific heat of the products of combustion in accordance with the equation

$$\bar{c}_r (t_r - t'') = c_r t_r - c_r t'' \text{ or } \bar{c}_r = \frac{c_r t_r - c_r t''}{t_r - t''}$$

eqs. (22) and (23) can be transformed into the following non-dimensional form:

$$\frac{\Pi' \left(1 + \frac{\Pi'^2}{4}\right)}{e^{k\Pi' l} - 1} K_m (\theta'^4 - \theta''^4) + \theta' - 1 = 0 \qquad (24)$$

$$\varepsilon K_m (\theta''^4 - \theta_2^4) + \theta'' - 1 = 0 \quad .. \quad (25)$$

where

$$\theta'' = \frac{T''}{T_r}, \quad \theta' = \frac{T'}{T_r}, \text{ and } \theta_2 = \frac{T_2}{T_r}$$

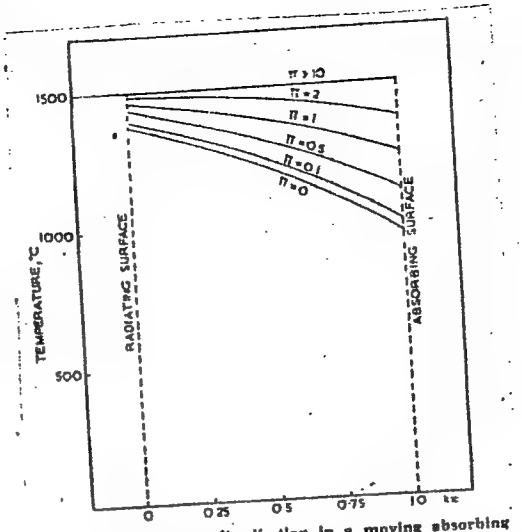


Fig. 3. Temperature distribution in a moving absorbing medium.

3. HEAT TRANSMISSION IN BOILER FURNACES

The solution of the problem discussed above of heat exchange by radiation between two bodies with parallel surfaces in the presence of a radiation-absorbing medium between these surfaces which moves towards the radiation-absorbing surface, can be applied to the calculation of heat transmission by radiation in boiler furnaces. The most appropriate model of a combustion chamber for the application of the solution obtained would be as follows :—

The combustion chamber represents a channel of arbitrary shape, but a cross-section of sufficient size. The side walls of the channel are heat-insulating, and the cooling surface is situated across the section of the combustion chamber. The heating medium moves along the channel towards the radiation-absorbing surface with a uniform velocity of w_0 [Nm³/m²hr]. The combustion of the fuel in the combustion chamber is completed before penetration of the heating medium through the radiation-absorbing surface.

For boiler furnaces, the temperature of the combustion products at the exit from the combustion chamber can be determined from eq. (25), which, on condition that $\theta_2' = \theta''$ is transformed into :

$$\epsilon K_n \theta''^3 + \theta'' - 1 = 0 \quad \ldots \quad (26)$$

It is interesting, to note that eq. (26), which is obtained only for combustion chambers with cooling confined to one surface, in the first approximation describes the results of experiments on industrial boiler furnaces with the heating criterion K_n ranging from zero to 1·8, and a constant value of the nominal coefficient of emissivity $\epsilon = 0{\cdot}85$, but irrespective of the constructional shape of the combustion chamber, the nature of the fuel and the method of combustion. This result is foreshadowed by eq. (26), in which variation of the nominal coefficient of emissivity ϵ has a relatively weak influence on the value of θ''. For instance, if ϵ is reduced to one half, from a value of 0·85 to 0·425, at a constant value of the criterion $K_n = 1{\cdot}8$, the magnitude θ'' will change from 0·678 to 0·753, i.e., by 11 per cent only. For smaller values of the criterion K_n, the variation of θ'' will be even less.

The weak influence of ϵ, which satisfies the so-called condition of model representation, considerably simplifies the analysis of heat transmission in boiler furnaces.

The comparison of eq. (26) with the existing formulae for the calculation of heat transmission in boiler furnaces, which are established from experimental data and which contain the magnitude ϵK_n as a determining parameter, is shown in Fig. 5, where the curves of $\theta'' = f(\epsilon K_n)$ represent our eq. (26), and two other methods of calculation.

SHKAIN, S. N.

"Heat Transfer" 1952

Textbook for students specializing in gas heat supply and ventilation.
However, the theoretical part is of general interest for heat transfer.

SHORIN, S. N.

SHORIN, S. N. -- "Transmission of Heat in a Ray-Absorbing Medium." Sub 22 May 52, Power Engineering Inst imeni G. M. Krzhizhanovskiy, Acad Sci USSR (Dissertation for the Degree of Doctor in Technical Sciences)

SO: Vechernaya Moskva, January-December 1952

Dissertation by S.N.Shorin "Heat transfer in a radiation absorbing madium." Izv. AN SSSR Otd.tekh.nauk no.5:788-789 My '53. (MLRA 6:8)
(Heat--Convection) (Shorin, S.N.)

SHORIN, S.N.

3023. Shorin, S. N., and Pravovnov, K. N., Heat exchange in cooled combustion chambers during the combustion of gases (in Russian), *Izv. Akad. Nauk SSSR Otd. tekh. Nauk* no. 8, 1122-1129, Aug. 1953.

Experimental calorimetric research and measurements, related to radiant heat-transfer theory, prove that specific heat delivery in water-walled, gas- or liquid-fuel-fired combustion chambers can be increased up to three times from values obtained with volume diffused flames. This is achieved by developing indirect radiating baffles, impinging the flame path and properly facing the cold walls. Stacks of refractor plates or grids of heat-resistant alloys are suggested. Such also act as aids to complete combustion by inducing turbulence and becoming incandescent igniters.

Reviewer believes that principles are sound, but practical full-size applications will meet great difficulties connected with extreme high-temperature structures, increasing rapidly with the size of the combustion chamber, its temperature, and its requirements of reliable long-term service. B. Poniak, USA

4/7/55

SHORIN, S.N.

USSR.

162/115 621.438.016.4

Radiation Heat Exchange in the Cooled Combustion Chambers of Gas Turbines

Izv.Akad.Nauk,Otd. Tekh.Nauk (10),99-111 1954 U.S.S.R.

S.N. Shorin

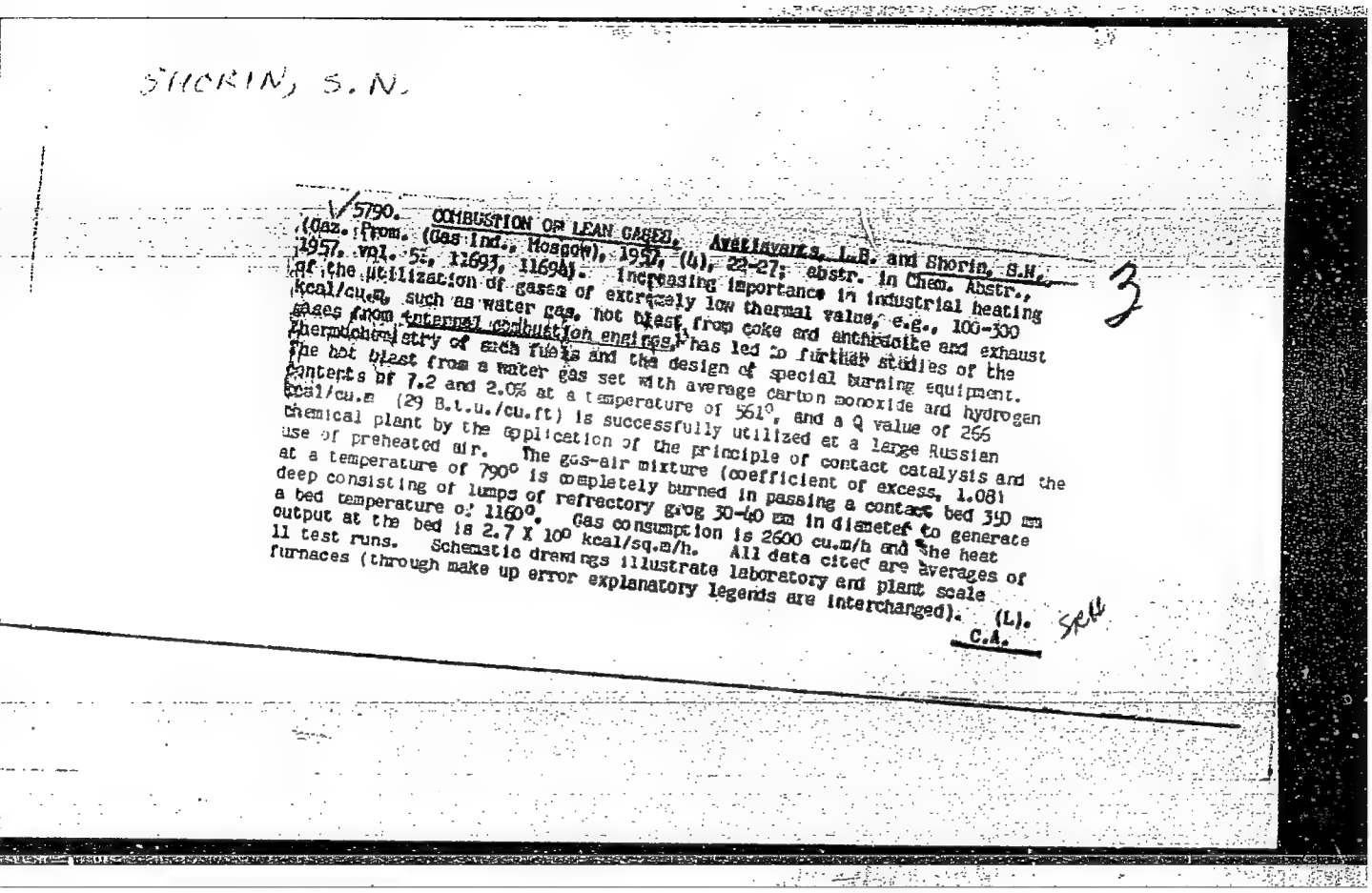
Mathematical discussion of various processes in a flow of burning mixture is offered, with particular reference to radiation heat exchange. Radiation temperature, which exists alongside kinetic temperature in a flow of radiating medium, is taken into account, since it determines radiation heat exchange. Results of calorific measurement of heat exchange in a cooled combustion chamber are briefly summarised. Because of the possibility of considerable radiation heat exchange in combustion chambers, in order to reduce the convective heating surfaces of heat exchangers in closed cycle gas turbines, provisions should be made to increase heat emission criteria in combustion space. (Bibl.2)

ARTYUKHOV, Ivan Mikhaylovich, kandidat tekhnicheskikh nauk; SHORIN, Serafim Nikolayevich, doktor tekhnicheskikh nauk; NOVOCHADOV, A.D., redaktor; KONYASHINA, A.D., tekhnicheskiy redaktor

[Gas supply] Gazosnabzhenie. Moskva, Izd-vo Ministerstva kommunal'nogo khoziaistva RSFSR, 1956. 325 p. (MLRA 9:9)
(Gas supply)

KOLCHENOGOVA, I.P. (Moskva); SHORIN, S.N. (Moskva)

Study of radiation energy transmission in attenuating media. Izv. AN SSSR.Otd.tekh.nauk no.5:29-39 My '56. (MLRA 9:8)
(Heat--Radiation and absorption)



SHORIN, S.N.

5790. COMBUSTION OF LEAN GASES. Avetisyants, L.R. and Shorin, S.N. (Gaz. Prom. (Gas Ind., Moscow), 1957, (4), 22-27; abstr. in Chem. Abstr., 1957, vol. 51, 11693, 11694). Increasing importance in industrial heating of the utilization of gases of extremely low thermal value, e.g., 100-300 kcal/cu.m, such as water gas, hot blast from coke and anthracite and exhaust gases from internal combustion engines, has led to further studies of the thermochemistry of such fuels and the design of special burning equipment. The hot blast from a water gas set with average carbon monoxide and hydrogen contents of 7.2 and 2.0% at a temperature of 561°, and a Q value of 266 kcal/cu.m (29 B.t.u./cu.ft) is successfully utilized at a large Russian chemical plant by the application of the principle of contact catalysis and the use of preheated air. The gas-air mixture (coefficient of excess, 1.08) at a temperature of 790° is completely burned in passing a contact bed 350 mm deep consisting of lumps of refractory grog 30-40 mm in diameter to generate a bed temperature of 1160°. Gas consumption is 2600 cu.m/h and the heat output at the bed is 2.7×10^6 kcal/sq.m/h. All data cited are averages of 11 test runs. Schematic drawings illustrate laboratory and plant scale furnaces (through make up error explanatory legends are interchanged). (L). C.A.

ADRIANOV, V.N, inzhener; SHORIN, S.N., doktor tekhnicheskikh nauk.

Heat transfer by radiating combustion products flowing in a channel.
Teploenergetika 4 no.3:50-55 Mr '57. (MLRA 10:3)
(Heat--Transmission)

SOV/24-58-5-8/31

AUTHORS: Andrianov, V. N. and Shorin, S. N. (Moscow)

TITLE: Radiant Heat Exchange in a Current of Radiating Medium (Luchistyy teploobmen v potoke izluchayushchey sredy)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Tekhnicheskikh Nauk, 1958, Nr 5, pp 46-53 (USSR)

ABSTRACT: In high temperature heat exchange devices heat transfer by radiation plays an important role. In a number of papers (Refs 1-6) this problem was considered assuming a uniform distribution of temperatures and velocities over the cross-section of the current; V. I. Pukhov (Ref 5) does assume uniform distribution across the cross-section of the speed but not of the temperature. The present paper presents an attempt to solve this problem taking into account non-uniform distribution of velocities and temperatures over a cross-section of a current of a radiating medium in the case of cylindrical and plane channels. The corresponding differential equation is solved under the assumptions that the medium is purely absorbing, the scattering coefficient equals zero, and the radiant heat transfer between elements of the medium within its volume can be

Card 1/2

Radiant Heat Exchange in a Current of Radiating Medium

neglected. The absorption coefficient of the medium is assumed to be constant. Explicit expressions are derived for the above two cases and the results are summarised in five graphs.
There are 7 figures and 8 references, 6 of which are Soviet, 1 German, 1 French.

SUBMITTED: February 18, 1958

AUTHORS: Shorin, S. N., Adrianov, V. N. SOV/30-58-7-39/49

TITLE: The Investigation of the Radiation Heat Exchange (Izucheniye luchistogo teploobmena)
Conference at the Institute of Power Engineering (Sessiya v Energeticheskom institute)

PERIODICAL: Vestnik Akademii nauk SSSR, 1958, Nr 7, pp. 129-130 (USSR)

ABSTRACT: This conference took place March 25 - 28, and was called by the Committee for High-Pressure, High-Temperature Steam at the Institute of Power Engineering imeni G.M. Krzhizhanovskiy AS USSR (Komissiya para vysokikh parametrov pri Energeticheskom institute im. G.M. Krzhizhanovskogo Akademii nauk SSSR). It was attended by: representatives of academic and branch institutes, of universities, of design organizations and industrial enterprises. M.A. Mikheyev, Member, Academy of Sciences, USSR, opened the meeting. The work of the conference was performed in sections: Furnace and firebox systems, furnace heat engineering, physical-technical section. Theoretical research was touched upon by a considerable proportion of the reports. Communications concerning various model representations of processes of radiation energy exchange were met with great

Card 1/2

interest. Apart from successful work also shortcomings in the field of experimental research were noted. In the conference the necessity was underlined to close the gap between theory and practice. The conference ordered the Commission for High-Pressure, High-Temperature Steam to coordinate research in this field in a systematic way and to work out a uniform multilateral plan of research. It was acknowledged to be expedient for the USSR to participate in the work of the International Committee for the Investigation of Flame Radiation (Mezhdunarodnyy komitet po issledovaniyu radiatsii plameni) in order to establish closer contact and collaboration with foreign scientists in the field of radiation heat exchange.

YERMOLAYEV, O.N., inzh.; SHORIN, S.N., prof., nauchnyy rukovoditel'

Experimental investigation of gas flame. Trudy MIKHM vol.16: 23-36 '58. (MIRA 14:7)
(Flame) (Gas burners)

24(8) PHASE I BOOK EXPLOITATION SOV/1826

Akademiya nauk SSSR. Energeticheskiy institut

Teploperedacha i teplovoye modelirovaniye (Heat TRANSFER and Modeling of Heat Processes) Moscow, Izd-vo AN SSSR, 1959. 419 p. Errata slip inserted. 3,500 copies printed.

Resp. Ed.: M. A. Mikheyev, Academician; Ed. of Publishing House: D. A. Ivanova; Tech. Ed.: G. N. Shevchenko.

PURPOSE: The book is intended for scientists concerned with heat transfer, heat emission, and hydraulics of liquid metals, etc.

COVERAGE: This collection is dedicated to the memory of Academician M. V. Kirpichev who in the twenties initiated a systematic investigation of heat transfer processes and the efficiency of heat apparatus. Later he led the development of research work in this field. Two special collections devoted to works of Kirpichev's school have been published, one in 1938, Materialy soveshchaniya po modelirovaniyu (Materials of the Conference on Modeling) and in 1951, Teoriya podobiya i modelirovaniye (Theory of Similitude and Modeling). The present collection prepared in 1956 represents further development of the work of this school. This theory is fundamental for the analysis of many heat problems in the field of electrical and radio engineering. Of great importance are the first systematic investigations of heat transfer and the hydraulics of liquid metals which as a new kind of heat carrier may be used in the various branches of modern engineering. As a result of special investigations of some cases of convective heat transfer, a dependence of the process on the kind of liquid, temperature, pressure, direction of the heat flow, and other factors, was discovered and established. On the basis of a wide generalization of experimental data, new dependable recommendations for heat analysis of engineering equipment were developed. Of no less interest is the work on heat transmission in boiling liquids and the condensation of vapors. All investigations are based on the theory of similitude, the nature of which, according to M. V. Kirpichev, is that of experimentation. Work on the theory of a regular regime applied to a system of bodies with an internal source of heat is of interest for the future.

Shorin, S. N., G. L. Polyak, I. P. Kolchanova, V. N. Adrianov, and O. A. Yermolayev. Light Modeling of Radiation Heat Transfer 165
The article gives fundamentals of the theory of radiation exchange in transparent and in illuminated media. It describes sources of light and changes of illumination and gives a photographic method for measuring screens of light. Investigations of radiation exchanges in cylindrical chambers and in banks of pipes, transfer of radiation energy in an illuminated medium, local illumination of walls of boiler burners and hearth bottoms of open hearth steel furnaces are described. The following personalities are mentioned:
O. Ye. Vlasov (approximate solution of a cylindrical equation).
Ya. S. Kuznetsov (dispersion of radiation), Academician
M. V. Kirpichev (investigation of radiation heat transfer in light models), L. A. Vulis (light modeling), G. L. Polyak, and S. N. Shorin (theory of radiation exchanges), and with the cooperation of V. A. Konstantinov (radiation exchanges in banks of pipes). The section on "Photographic Method of Measuring Light Streams" was compiled by V. N. Adrianov and G. L. Polyak; the section "Investigation of the Transfer of Radiation Energy in an Illuminated Medium" was compiled by I. P. Kolchanova, S. N. Shorin and V. N. Adrianov; sections on "Measurement of Local Illumination of Walls of Models of Boiler Burners" and "Investigation of Local Illumination of the Surface of the Bottom of an Open-Hearth Furnace" were compiled by O. N. Yermolayev and S. N. Shorin. There are 27 references: 19 Soviet, 5 English, and 3 German.

AVAILABLE: Library of Congress

Card 20/20

13/dfh
8-7-59

SOV/96-59-2-10/18

AUTHORS: Chorin, S.N., Doctor of Technical Sciences
Yermolayev, O.N., Engineer

TITLE: The Combustion and Radiation Characteristics of a Turbulent Gas Flame (Kharakteristiki goreniya i radiatsii turbulentnogo gazovogo fakela)

PERIODICAL: Teplcenergetika, 1959, Nr 2, pp 57-62 (USSR)

ABSTRACT: Because of the increasing use of gas fuel it is important to have general formulae for determining the flame length during the combustion of turbulent jets of various gases and to know the radiation characteristics of burning gas jets. The characteristics of a turbulent gas flame are discussed; conditions in general are unstable and pulsating. A combustion front exists inside the flame and a formula is given for its length. The rate of propagation of the flame in a turbulent flow of combustible gas is considerably higher than the rate of flame propagation in laminar flow. However, because of the low stability of the flame front in turbulent flow various kinds of artificial stabiliser are required to retain the flame near the burners. On the basis of mass transfer theory a formula is derived

Card 1/7

The Combustion and Radiation Characteristics of a Turbulent Gas Flame

for the length of the turbulent precombustion zone. Finally an expression is given for the length of a turbulent flame. With this general relationship as a basis special tests were made to obtain a definite formula for the length of a turbulent flame as a function of various governing criteria when burning different gases. The experimental set-up used to study the combustion of burning jets of gas is illustrated diagrammatically in Fig 2. It includes an arrangement to preheat the gas to any required temperature, a nozzle box which can take nozzles of the different shapes and sizes illustrated in Fig 3 and various devices to control and measure the flow of gas, its temperature and pressure and radiation from the flame. Various methods of measuring the flame length were examined and simple visual examination was found best. A hydraulic level indicator, shown diagrammatically in Fig 2, was devised to facilitate evaluation of the position of the top of the flame. The composition of

The Combustion and Radiation Characteristics of a Turbulent Gas Flame

the Moscow Town gas used in the tests was not strictly constant, which somewhat impaired the accuracy of the results; the mean composition is given. Altogether, 23 series of tests were made on town gas, 9 series on propane and 4 series on hydrogen, making nearly 1000 individual tests in all. Each series of tests was made with a particular nozzle diameter. The variables in tests of a given series were gas consumption and temperature. The nozzles were made from a number of different materials and ranged in diameter from 2.0 to 10.1 mm. In calculating the diffusion criterion the coefficient of kinematic viscosity was calculated for the ambient air temperature and the coefficient of molecular diffusion for the temperature of the gas on leaving the nozzles. This was a bit arbitrary since the temperature at which the process of molecular mixing occurs in burning jets is considerably higher than the initial gas temperature and is different in different parts of the flame. As the object of this

 investigation was only to obtain quantitative data about

The Combustion and Radiation Characteristics of a Turbulent Gas Flame

the characteristics of turbulent flames, burning gas of given composition, the densities of the gas and air were not considered in working out the test results. The method of plotting the results that was used to determine the influence of different criteria on the length of the flame is explained and the experimental results are then plotted in Fig 5 and 6. Formulae (4), (5) and (6) are then given for the flame length of town gas, propane and hydrogen respectively. Formulae given by previous authors for flame length are briefly considered and their limitations discussed; one makes unjustifiable assumptions and another is valid only for cold gas. However the present tests showed that the length of turbulent flames is much affected by the initial gas temperature. Other things being equal, increase in the gas temperature shortens the flame length because the temperature has a marked effect on the diffusion coefficient of the gas. The initial

 diameter of the jet also has a very strong influence on

The Combustion and Radiation Characteristics of a Turbulent Gas Flame

the length of the turbulent flame, the less the initial diameter the less the length of the flame. The most important feature of turbulent jets of burning gas in a free oxidising medium is diffuse after-burning of gas clusters and it is this process that mainly governs the length of the turbulent flames. The radiation characteristics of a flame are then considered and formula (8) is derived for the total radiation from the flame. The extent to which part of this radiation may be absorbed by the medium immediately surrounding the flame is then considered and suitable corrections are given for the radiation formulae. In the tests the radiation characteristics of the flames were studied by measuring the radiation at a fixed place on the circumference of the flame, as shown in Fig 2. The radiometer was placed in such a way as to record radiation from the flame in a direction perpendicular to its axis, because this corresponds most closely to conditions of radiation from a flame to the lateral heating surfaces in furnaces. The results of local

The Combustion and Radiation Characteristics of a Turbulent Gas Flame

radiation measurements on flames of town gas and propane-butane are plotted in Fig 7 in which the bold line corresponds to formula (12). The formulae previously derived to determine the length of the gas flames are applied to obtain formulae (13) and (14) for the radiation characteristics using Moscow City gas and liquid gas respectively. These characteristics can be used to explain the influence of various factors on the radiation from the flame, the most important of which is the initial diameter of the jet and the theoretical combustion temperature of the gas. In actual furnace conditions part of the radiation from the flame is absorbed by combustion products but the amount so absorbed can be reduced by keeping the flame near to the surfaces being heated. The object of the tests described was to study flame characteristics in the purest form without the complications that result from the influence of various conditions surrounding the

The Combustion and Radiation Characteristics of a Turbulent Gas Flame

flame such as the arrangement, shape and size of surrounding walls, their reflecting and absorbing properties and so on. There are 7 figures and 2 references of which 1 is Soviet and 1 English.

ASSOCIATION: Moskovskiy Institut Khimicheskogo Mashinostroyeniya (Moscow Institute of Chemical Engineering)

SOV/96-59-4-12/21

AUTHORS: Adriancv, V.N., Candidate of Technical Sciences and Shorin, S.N., Doctor of Technical Sciences

TITLE: An Investigation of Heat Exchange in a Gas Combustion Chamber (Issledovaniye teplocbmena v kamere goreniya gaza)

PERIODICAL: Teploenergetika, 1959, Nr 4, pp 62-67 (USSR)

ABSTRACT: When a turbulent flow of gas previously mixed with air is burned the combustion process is mostly localised into a small part of the combustion chamber. Under these conditions the process of heat exchange has special features and requires special study. Purely analytical investigation of the question presents great mathematical difficulties because of the complexity of the systems of equations that describe the processes occurring in gas combustion chambers. For similar reasons it is very difficult to apply the theory of similarity to the solution of such problems. There seem, however, to be two possible approaches to investigation of the complex processes that occur in combustion chambers. The process

Card 1/7

An Investigation of Heat Exchange in a Gas Combustion Chamber

of heat exchange can be investigated experimentally making use of the theory of similarity in the simplest possible devices that have real physical meaning. One variable can then be altered at a time keeping the others constant so far as possible. This approach greatly simplifies derivation of the final functional relationship, makes the results more reliable and has other practical advantages. Then the theory of similarity is developed so as to seek more general invariable links for the complex combustion processes than are given by the classical methods of the theory of similarity. This method is a synthesis of mathematical and experimental investigations and it consists essentially in extending the concept of similarity from a group of similar effects to a class and then considering more generally the conditions of uniqueness and making use of complex invariant links. In this article use is made of the first of these two proposals to investigate the influence of the hydrodynamic and optical characteristics of the medium on heat exchange in a given gas combustion chamber. The investigations were specially arranged so that a

An Investigation of Heat Exchange in a Gas Combustion Chamber

considerable umber of invariants were maintained constant and a number of criteria were uniquely determined by the hydrodynamic criterion, the Reynolds number. The entire complex of physical effects that occur in heat exchange chambers can be represented by a system of differential and integro-differential equations. The principal equations concerned are the following:
(1) the equation of motion of viscosity of the compressed fluid for three-dimensional motion of the medium in which the coefficient of dynamic viscosity and the density are considered as variables depending on the temperature, pressure and composition of the medium at any point;
(2) the equation of mass transfer;
(3) the energy equation that represents the law of conservation of energy for each elementary volume of the medium;
(4) the combustion equation that relates the rate of the combustion reaction to the rate of supply of reacting components in the elementary volume considered, that occurs as a result of molecular and molar transfers;

An Investigation of Heat Exchange in a Gas Combustion Chamber

(5) the characteristic equations that relate the physical parameters of the medium to its temperature, pressure and composition;
(6) the stoichometric equations of the reacting gas-air mixture that give the relationships between changes in concentration of all the components of the reacting mixture.
By the application of the theory of similarity to this system of equations the dimensionless field of all the magnitudes required can be represented as a function of determining criteria that enter into the conditions of uniqueness. This analysis considers geometrically similar combustion chambers of given shape and arrangement of heating surfaces and also with given temperature, pressure, composition and velocity of gas mixture at inlet. The system of determining invariants is then listed. It is then shown how the system may be simplified and finally a very simple system is arrived at. The experimental apparatus is then described. It consists of a model furnace, a system for delivering dust, air and gas and arrangement for removing combustion products.

Card 4/7

An Investigation of Heat Exchange in a Gas Combustion Chamber

The model furnace is illustrated in Fig.1 and consists of a calorimetric combustion chamber and cooling chamber of cylindrical shape. The experimental procedure is described. The fuel used was Moscow Town gas. Some tests were made with a dusty flame using chrome-magnesite dust of an average size of 30 microns. The equipment was fully instrumented. Using this equipment 67 tests were made with clear flames and 46 with dusty flames. The range of variation of the most important experimental factors is given. From consideration of expression (5) it is evident that the Reynolds number uniquely determined a number of other criteria and since the investigation covered quite a wide range of Reynolds number at the inlet section it would be expected that this criterion would have an important influence on the heat exchange. The nature of this influence is illustrated graphically in Fig.2, which gives the relationships of the criteria of heat exchange for the combustion and cooling chambers as functions of Reynolds number. It will be seen that these variables are

An Investigation of Heat Exchange in a Gas Combustion Chamber

governed almost uniquely by the Reynolds number and accordingly the other criteria concerned must have considerably less effect. A further way of showing the close relationship between heat exchange criteria and Reynolds number is illustrated graphically in Fig.3 from which approximate heat exchange formulae are derived. The structure of the formulae reveals the nature of the influence on heat exchange of such important factors as load and theoretical combustion temperatures. It may be concluded from the experimental graphs that under the given experimental conditions the hydrodynamic characteristics of the flow represented by the Reynolds number have a dominating influence on heat exchange. Within the range considered other factors are relatively unimportant and may be neglected. Attempts to generalise the experimental data by constructing corresponding relationships as function of the Bolzmann criterion are much less satisfactory as will be seen from the graph given in Fig.4. The general form of the relationship is obviously similar to that given in Fig.2 but the scatter of the points is much greater and there can be no question

An Investigation of Heat Exchange in a Gas Combustion Chamber

of there being a unique relationship. This is partly because the Bolzmann criterion does not uniquely determine the process of heat exchange in combustion chambers in general and for the given conditions in particular. Further, the inclusion of the theoretical temperature in the Bolzmann criterion as a condition of uniqueness is not sufficiently well founded as this temperature does not occur in combustion chambers. There are 4 figures.

ASSOCIATION: Energeticheskiy Institut AN SSSR (Power Institute of the Academy of Science USSR)

KOLCHENOGOVA, I.P.; SHORIN, S.N.

Intensification of heat exchange during the burning of gas. Gaz. prom. 4 no.2:27-33 F '59. (MIRA 12:3)
(Heat--Transmission) (Gas as fuel)

PHASE I BOOK EXPLOITATION SOV/4394

Akademiya nauk SSSR. Energeticheskiy institut

Konvektivnyy i luchistyy teploobmen (Convection and Radiation Heat Exchange) Moscow, Izd-vo AN SSSR, 1960. 234 p. Errata slip inserted. 3,200 copies printed.

Ed.: M.A. Mikheyev, Academician; Ed. of Publishing House: G.B. Gershbeyn; Tech. Ed.: V.V. Bruskil'.

PURPOSE: The book is intended for scientists and engineers working in various branches of science and industry concerned with thermodynamics and heat transfer problems.

COVERAGE: The book consists of 19 original articles on various problems in thermodynamics. The following subjects are discussed: mechanism of heat transfer processes, intensification of heat exchange, determination of thermophysical properties of operating media, heat transfer in supersonic flow of gas, and combustion chambers and nuclear reactors. Theory and experimental techniques are described. Each article describes the conditions of the experiment and tables of the experimental data obtained are given. The data may be used for calculations of heat transfer and heat exchangers, always taking account of

AVAILABLE: Library of Congress

SHORIN, S.N., doktor tekhn. nauk, prof., red.; SHCHEPKIN, S.I., zasl. deyatel' nauki i tekhniki, prof., otv. red.; LASTOVTSEV, A.M., prof. red.; KARAVAYEV, N.M., prof., red.; KOKOREV, D.T., prof., red.; PETROKAS, L.V., prof., red.; RESHCHIKOV, P.M., dots., red.; SOKOLOV, S.N., prof., red.; SOKOLOV, S.I., prof., red.; KHODZHAYEV, A.M., dots., red.; LEBEDEV, K.I., kand. tekhn. nauk, dots. red.; TAIROVA, A.L., red. izd-va; UVAROVA, A.F., tekhn. red.

[Investigation and calculation of heat engineering and power generating processes] Issledovaniia i raschety teploenergeticheskikh i energo-khimicheskikh protsessov; sbornik statei. Pod red. S.N.Shorina. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1961. 137 p. (MIRA 14:10)

1. Moscow. Institut khimicheskogo mashinostroyeniya.
(Heat engineering) (Power engineering)

32727
S/671/61/000/000/003/003
A059/A126

26.5000

AUTHORS: Shorin, S.N., Doctor of Technical Sciences, Professor, and Chipashvili, O.N., Engineer

TITLE: Action of circular flow on the heat exchange in a gas combustion chamber

PERIODICAL: Issledovaniye i raschety teploenergeticheskikh i energokhimicheskikh protsessov; sbornik statey; Gosudarstvennoye nauchno-tekhnicheskoye izdatel'stvo mashinostroitel'noy literatury, Moskva, 1961, 135 - 138

TEXT: In circular-flow gas burners, the flow of the hot mixture unlike to straight-flow burners, takes place yielding an umbrella-shaped expanding current in the outer section and a countercurrent flow of combustion products in the central part of the combustion chamber. Under these conditions, it is evident that better exchange of heat will be provided due to the flow of high-temperature combustion products in the neighbourhood of the chamber walls. The heat exchange efficiency in the chamber is increased as a consequence of both convective heat transfer of the combustion products and

Card 1/3

Action of circular flow.....

tion chamber, the relation

$$\sigma = \frac{1}{1 + 0{,}03\mathrm{Re}^{0{,}45}}$$

holds for straight flow, and the relation

$$\sigma = \frac{1}{1 + 0{,}0074\mathrm{Re}^{0{,}55}}$$

for circular flow. Thus, the heat exchange in a circular-flow combustion chamber exceeds that found in the straight-flow chamber by 30 - 40%. There are 3 figures, and 1 Soviet-bloc reference.

Card 3/3

FEDOROV, L.F., inzh.; SHORIN, S.N., doktor tekhn.nauk, prof.

Characteristics of flow circulation in evaporating units. Khim. mash. no.3:16-19 My-Je '61. (MIRA 14:5)
(Evaporation)

SHVAIN, R.N.; CHIPACHENKO, V.N.

Calculating heat exchange in cooled gas combustion chambers.
Gaz. prom. 8 no.1 [illegible] '63 (MIRA 17:7)

L 16470-65 EWT(l)/EPF(c)/EPF(n)-2/EPR/T/EPA(bb)-:/EWA(l) Pr-4/Ps-4/Pu-4 AEDC(a)/
SSD/ASD(f)-2/BSD/AS(mp)-2 WW

ACCESSION NR AM4046252 BOOK EXPLOITATION S/

Shorin, Serafim Nikolayevich

Heat transfer (Teploperedacha), Moscow, Izd-vo "Vysshaya shkola", 1964, 489 p. illus., biblio. Errata slip inserted. 20,000 copies printed.

TOPIC TAGS: heat transfer

TABLE OF CONTENTS [abridged]:

Card 1/2

L 16470-65
ACCESSION NR AM4046252

SUB CODE: TD SUBMITTED: 23Jan64 NR REF SOV: 071

OTHER: 011

Card 2/2

ACCESSION NR: AT4037715 S/2865/64/003/000/0460/0471

AUTHOR: Shorin, S. N.; Dapshis, V. M..(Deceased)

TITLE: The problem of burning the waste products of vital activity of organisms

SOURCE: AN SSSR. Otdeleniye biologicheskikh nauk. Problemy* kosmicheskoy biologii, v. 3, 1964, 460-471

TOPIC TAGS: manned space flight, closed ecological system, biological waste

ABSTRACT: The propagation of a "normal-reaction" front is discussed in which a front gas reaction is initiated (by preheating and by forming of intermediate products) and completed. The advancing of the normal front is considered a self-repetition of this reaction in time and space, and its possibility is determined by the thermodynamics of the reacting system and by mass and energy transfer of the reacting components. A formula is derived (by using the principle of energy conservation) for determining the lower limit of fuel-gas-mixture concentration necessary for the self-repetition, and calculated limit-concentration values are compared with experimental values in a table for a number of gases. Equations of mass and energy transfer are used in deriving a formula for calculating the rate of the normal-front propagation. The process is considered to be one-dimensional.

Card 1/2

KAKABADZE, V.Sh.; SHORIN, S.N.

High-temperature conversion of natural gas in a reactor with twisted streams. Soob. AN Gruz. SSR 38 no.2:329-336 My '65. (MIRA 18:9)

1. Moskovskiy institut khimicheskogo mashinostroyeniya Ministerstva vysshego i srednego spetsial'nogo obrazovaniya RSFSR. Submitted December 2, 1964.

L 29098-66 EWT(l)/EWP(m)/EWT(m)/EWP(w)/EWA(d)/T/EWP(t)/ETI/EWP(k)/FCS(k)/EWP(t) Pd-1 37 36

ACCESSION NR: AP5001061 S/0096/65/000/002/0083/0086 B

AUTHORS: Ter-Oganes'yants, A. A. (Engineer, Dissertant); Shorin, S. N. (Doctor of technical sciences, Professor)

TITLE: Heat exchange and frictional resistance in a high temperature gas flow

SOURCE: Teploenergetika, no. 2, 1965, 83-86

TOPIC TAGS: heat exchange, friction, gas flow, Nusselt number, Stanton number, combustion, calorimeter, thermocouple, copper/ MK 1 micromanometer, T 1 3(4) thermometer

ABSTRACT: Experimental results from studies on the heat exchange and frictional resistance during the cooling of a high temperature stream of gas flowing through a pipe with constant wall temperature are reported. Gas and air at a determined pressure were admitted into a combustion chamber. After combustion the gases were sent through a tube calorimeter, and then let out into the atmosphere. The calorimeter tube was cooled by water. The heat of combustion of the gas was measured by a gas calorimeter, before passing the gas into the tube. The gas-to-air ratio was controlled by a flue gas analyzer installed at the end of the tube calorimeter. The static pressure was measured by a micromanometer MK-1 (sensitivity

Card 1/2

L 29098-65

ACCESSION NR: AP5004061

of 0.01 mm of water; the tube calorimeter had an internal diameter of 51 mm and an effective length of 300 mm; water temperatures were measured by V-1-3(4) type mercury thermometers (accuracy of 0.1C); and pipe temperatures were measured by copper-constantan thermocouples. The tests were performed over a range of Reynolds numbers from 4000 to 30000. The value of ψ, the mean ratio of gas-to-wall temperature, varied from 2.04 to 3.71. The following empirical formulas were obtained for the Nusselt number: for smooth pipes

$$\overline{Nu} = 0{,}021\ Re^{0{,}8}\overline{\psi}^{0{,}43};$$

and for rough pipes

$$\overline{Nu} = 0{,}015\ Re^{0{,}85}\overline{\psi}^{0{,}43}.$$

The corresponding values of the Stanton numbers were obtained as $0.046\ Re^{-0.26}$ and $0.022\ Re^{-0.16}$. Orig. art. has: 13 formulas and 7 figures.

ASSOCIATION: Moskovskiy institut khimicheskogo mashinostroyeniya (Moscow Chemical Machine Construction Institute)

SUBMITTED: 00 ENCL: 00 SUB CODE: TD, ME

NO REF SOV: 010 OTHER: 002

Card 2/2

SUKHOV, V.I.; SHORIN, S.H.

Effect of the introduction of a combustible mixture on the heat exchange in the combustion gas chamber. Gaz. prom. 10 no.9:35-39 '65. (MIRA 18:11)

DUL'KIN,M., inzhener; SHORIN,V., inzhener

New type of portable metallic props. Mast.ugl.4 no.7:23-24 Jl'55.
(Mine timbering) (MLRA 8:10)

SHORIN, V., kand. tekhn. nauk; YAKIMOV, E., inzh.

Reducing the maximum of the electric load on feeders. Rech. transp. 22 no.9:21-23 S '63. (MIRA 16:10)

SHMEN, V.A.

Antibiotics

Experimental study of pharmacological and therapeutic properties of albomycin.
Novosti med. no. 23, 1951.

9. Monthly List of Russian Accessions, Library of Congress, DECEMBER 1952 1953. Unclassified.

[redacted]

SO: Monthly List of Russian Accessions, Vol 7, No 9, June 1954.

SHORIN, V.A., professor; YERMOL'YEVA, Z.V.

Review of "Antibiotics and their use; collection of experimental studies." Edited by Z.V.Ermol'eva. Transactions of the Academy of Medical Sciences of the U.S.S.R., vol.22, no.1. Vest.AMN SSSR no.3:60 '53. (MLRA 7:1)

1. Chlen-korrespondent Akademii meditsinskikh nauk SSSR (for Yermol'yeva). (Antibiotics)

SHORIN, V.A., kandidat meditsinskikh nauk.

Antibiotics and their role in modern medicine. Med.sestra no 5:12-18 My '53. (MLRA 6:5)
(Antibiotics)

SHORIN, V. A.

"Antibiotics and their practical use." P. N. Kashkin.
Reviewed by V. A. Shorin. Mikrobiologiia 22 no. 3: 347-349
My - Je '53

SHORIN, V.A.

Mechanism of the therapeutic effect of albomycin. Zhur.mikrobiol.epid. i immun. no.3:88 Mr '54. (MLRA 7:4)

1. Iz laboratorii antibiotikov Akademii meditsinskikh nauk SSSR.
(Antibiotics)

SHORIN, V.

Reviews and bibliography ("Elements of Bacterial cytology." G.Knaysi. Reviewed by V.Shorin.) Antibiotiki 7 no.1:149-150 '54. (MLRA 7:5)
(Bacteria) (Cells) (Knaysi, Georges Abdallah, 1898-)

Effect of aerobic and anaerobic conditions of growth of bacteria on antibacterial activity of albomycin and other antibiotics. V. A. Shorin and Yu. O. Suzykin. *Doklady Akad. Nauk S.S.S.R.* 96, 645–7(1954).—Albomycin at all concns. represses the aerobic metabolism of staphylococcus and intestinal bacteria but has no effect on their anaerobic metabolism. Streptomycin in therapeutic concns. behaves similarly, while at high concns. it also represses the anaerobic metabolism. Aureomycin and chloromycetin repress bacterial growth regardless of aerobic or anaerobic conditions of the culture. G. M. Kosolapoff

Inst. for Research on New Antibiotics, AMS USSR

SHORIN, V.

"The sulphonamides and antibiotics in man and animals." [in English] J.S.Lawrence, J.Francis. Reviewed by V.Shorin. Antibiotiki 8 no.3: 125-126 '55. (MIRA 8:7)
(LAWRENCE, J.S.)
(ANTIBIOTICS)

SHORIN,V.A., doktor meditsinskikh nauk

Antibiotics in medicine. Nauka i zhizn' 22 no.8:21-24 Ag'55.
(Antibiotics) (MLRA 8:10)

YERMOL'YEVA, Z.V., professor, otvetstvennyy redaktor; BILIBIN, A.F., professor; SHORIN, V.A., redaktor; POPRYADUKHIN, K.A., tekhnicheskiy redaktor

[Biomycin; experimental and clinical studies of biomycin] Biomitsin; eksperimental'noe i klinicheskoe izuchenie biomitsina. Otv.red. Z.V. Ermol'eva i A.F.Bilibin. Moskva, Gos. izd-vo med. lit-ry. Vol.2. [A collection of articles] Sbornik statei. 1956. 202 p. (MLRA 9:11)

1. Chlen-korrespondent Akademii meditsinskikh nauk SSSR (for Yermol'eva, Bilibin)
(AUREOMYCIN)

SHORIN, V.A. [translator]; RUZHKOV, V.L., red.

[The ontogenesis of viruses; a collection of papers. Translations] Ontogenez virusov; sbornik statei. Perevod V.A.Shorina, pod red. i s predisl. V.L.Ruzhkova. Moskva, Izd-vo inostrannoi lit-ry, 1956. 278 p. (MIRA 11:1)

(VIRUSES)

SHORIN, V.A.

USSR / Pharmacology, Toxicology. Chemotherapeutic Agnets U-7

Abs Jour : Ref. Zh. Biol., No 3, 1958, No 8098

Author : Shorin, V.A.

Inst :

Title : New Realms in the Use of Albomycin

Orig Pub : Antibiotiki, Eksperim.-Klinich. Izuch. M., 1956, 224-226

Abstract : Various data from the literature are given indicating a high therapeutic value of albomycin in the treatment of Spirochetosis acarina, caused by Borellia sogdianum. It is recommended that albomycin in a physiological solution, or in a 1% solution of cocaine, be injected subcutaneoudly, first in large doses and later in gradually diminished doses. A 100,000 u dose of albomycin circumscribed experimental peritonitis in the rabbit. It acted favorably on

Card : 1/2

USSR/Microbiology. Antobiosis, and Symbiosis. Antibiotics. F-2

Abs Jour : Ref. Zhur-Biologiya, No 1, 1957, 514

Author : V. A. Shorin, O. K. Rossolimo, E. S. Kudrina

Inst :

Title : On Methods of a Search for New Antibiotics with Antivirus Action

Orig Pub : Antibiotiki, 1956, 1, No 1, 15-18

Abstract : The upper surface of leaves of thorn apple (Datura stramonium D. alba, D. bernhardii) and tobacco (Nicotiana glutinosa) were infected with the virus of tobacco mosaic. Twenty to 30 minutes later an agar block with grown actinomyces was placed on one-half of a leaf. On the

Card 1/4

USSR/Microbiology. Antobiosis, and Symbiosis. Antibiotics. F-2

Abs Jour : Ref. Zhur-Biologiya, No 1, 1957, 514

Abstract : distance from the blocks. From one strain, antivirubin, an antibiotic which possesses strong antivirus action and which depresses the growth of staphlococcus aureus, was obtained. Culture fluids or solutions of antibiotics were mixed with a suspension of influenza A virus. Following a 3 hour period of incubation at room temperature the mixture was injected into mice. Of 212 cultured fluids (the largest portion of which was selected on the basis of their action on the virus of tobacco mosaic) 156 (73.6%) had no effect on the influenza virus, while 56 (26.4%) either partially

Card 3/4

"Pharmacological Investigation of Colimycin," by V. A. Shorin, L. Ye. Gol'dberg, and I. A. Kunrat, Institute of the Search for New Antibiotics, Academy of Medical Sciences USSR, Antibiotiki, Vol 1, No 5, Sep/Oct 56, pp 8-12

This work reports the results of experiments conducted on white mice, guinea pigs, rabbits, and cats to determine the toxicity and cumulative properties of the antibiotic colimycin and its effect on the central and automatic nervous systems and blood circulation. The experiments established the following; the LD_{50} of colimycin when administered intravenousuly to white mice was 32-45 milligrams per kilogram body weight; when administered subcutaneously, 260-270 milligrams per kilogram body weight; colimycin had a depressing effect on the central nervous system of all animals; and it exhibited no cumulative properties; and repeated subcutaneous administrations of colimycin had no toxic effect on the peripheral blood and the blood-producing organs of the guinea pigs.

Pure preparations of the antibiotic exhibited no pyrogenic properties. Colimycin was found to have a moderate hypotensive action. Large doses did not intensify its hypotensive action, but prolonged it. It had little effect on the automatic nervous system and, in large concentrations, acted as a mild antihistamine agent.

SHORIN, V.A., doktor meditsinskikh nauk.

Antibiotics. Zdorov'e 2 no.3:2-4 Mr '56 (MLRA 9:6)

(ANTIBIOTICS)

SHORIN, V.A.,; ROSSOLIMO, O.K.

Antiviral activity and therapeutic characteristics of the antibiotic antivirubin. Antibiotiki, Moskva 9 no.2:47-50 Mar-Apr 56 (MLRA 9:3)

1. Institut po izyskaniyu novykh antibiotikov AMN SSSR.
(ANTIBIOTICS
antivirubin, eff. on viruses & ther. value)
(VIRUSES
tobacco mosaic virus, eff. of antivirubin)
(INFLUENZA VIRUSES, eff. of drugs on
antivitubin)
(SMALLPOX, virus
eff. of antibirubin)

SHORIN, V.A. (Dr. of Med. Sci.)

"New Fields of Application of Albomycin,"

Ministry of Health USSR Proceedings of the Second All-Union Conference on Antibiotics, 31 May - 9 June 1957. p. 405, Moscow, Medgiz, 1957.

SHORIN, V.A.; YUDINTSEV, S.D.; KUNRAT, I.A.; GOL'DBERG, L.Ye.; PEVZNER, N.S.; BRAZHNIKOVA, M.G.; LOMAKINA, N.N.; OPARYSHEVA, Ye.F.

The new antibiotic actinoidin. Antibiotiki 2 no.5:44-49 S-O '57. (MIRA 10:12)

1. Institut po izuskaniyu novykh antibiotikov AMN SSSR.
(ANTIBIOTICS,
actinoidin, pharmacol. (Rus))

SHORIN, V.A.

BRINBERG, S.L.; TRAKHTENBERG, D.M.; SHORIN, V.A.

Second All Union Conference on Antibiotics. Antibiotiki 2 no.5: 54-62 S-O '57. (MIRA 10:12)
(ANTIBIOTICS)

GAUZE, G.F.; PREOBRAZHENSKAYA, T.P.; KOVALENKOVA, V.K.; IL'ICHEVA, N.P.; BRAZHNIKOVA, M.G.; LOMAKINA, N.N.; KOVSHAROVA, I.N.; SHORIN, V.A.; KUMRAT, I.A.; SHAPOVALOVA, S.P.

Crystallomycin, a new antibacterial antibiotic [with summary in English]. Antibiotiki 2 no.6:9-14 N-D '57. (MIRA 11:2)

1. Institut po izyskaniyu novykh antibiotikov AMN SSSR.
(ANTIBIOTICS, preparation of,
crystallomycin, prod. from Actinomyces violaceoniger (Rus))
(ACTINOMYCES
violaceoniger, prod. of antibiotic crystallomycin (Rus))

BRAZHNIKOVA, M.G.; KOVSHAROVA, I.N.; GAUZE, G.F.; SVESHNIKOVA, M.A.; BOBKOVA, T.S.; SHORIN, V.A.; ROSSOLIMO, O.K.

Coerulomycin, a new antiviral antibiotic produced by Actinomyces coerulescens [with summary in English]. Antibiotiki 2 no.6:16-20 N-D '57. (MIRA 11:2)

1. Institut po izuskaniyu novykh antibiotikov AMN SSSR.
(ACTINOMYCES,
coerulescens, prod. of antiviral antibiotic coerulomycin (Rus))
(ANTIBIOTICS, preparation of,
coerulomycin, prod. by Actinomyces coerulescens (Rus))